Improved Rock Core Sample Break-off, Retention and Ejection System, Phase I

Completed Technology Project (2009 - 2009)

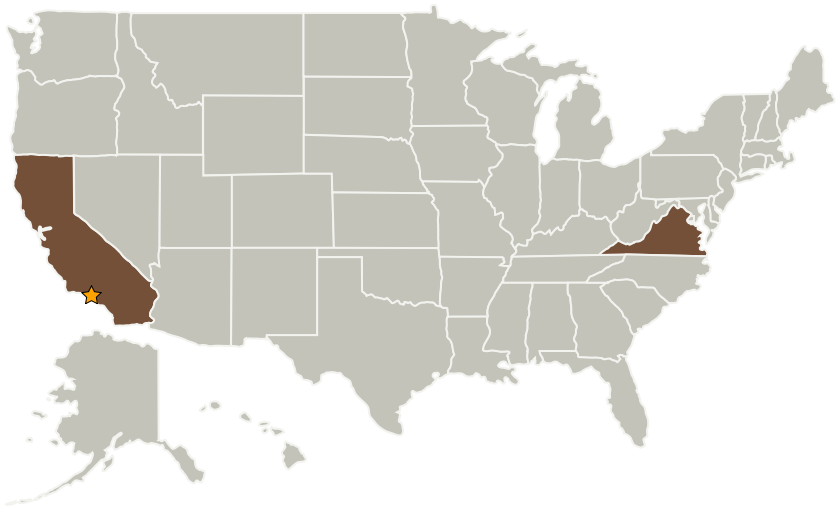
Project Introduction

The proposed effort advances the design of an innovative core sampling and acquisition system with improved core break-off, retention and ejection features. The proposed innovation employs a different drill tube design in the vicinity of the core that does not impose any loads on the core and does not rotate relative to the core. This novel technique actually envelopes and protects the core as it is generated. The benefits are two fold; first, the integrity of the core is maintained and second, core ejection is much easier which greatly reduces, if not eliminates the risk of the core jamming within the drill tube/bit. These improvements can be obtained without increasing the annulus of the drill bit that would otherwise require more down force, torque, power and bit wear. At the end of the proposed Phase 1 effort, the design of the coring system will be at TRL 4 and by the end of a potential Phase 2, the system will be at TRL 6.

Anticipated Benefits

Potential NASA Commercial Applications: The proposed research is expected to have commercial applications for geological studies in the mining and environmental industries.

Primary U.S. Work Locations and Key Partners



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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Bear Technologies, LLC	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Oilville, Virginia

Primary U.S. Work Locations	
California	Virginia

Project Transitions

January 2009: Project Start

July 2009: Closed out

Closeout Summary: Improved Rock Core Sample Break-off, Retention and Ejection System, Phase I Project Image

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

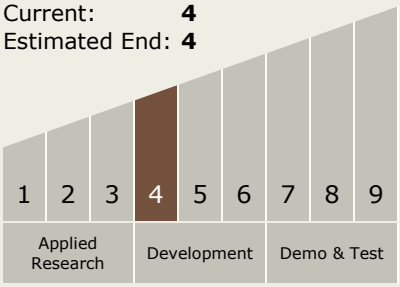
Carlos Torrez

Principal Investigator:

Thomas Myrick

Technology Maturity (TRL)

Start: **4**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.3 Sample Handling